USSR

FROLOV, G. D.

UDC: 8.74

"Some Characteristics of Sound Codes"

Moscow, V sb. Tsifr. vychisl. tekhnika i programmir. (Digital Computer Techniques and Programming--collection of works) "Sov. Radio," No 7, 1972, pp 160-166 (from RZh--Matematika, No 8, 1972, Abstract No 8V675)

Translation: A description is given of an approximation method for automatic segmentation of the speech signal and some characteristics of sound codes that may be used in the creation of automatic recognition systems of speech forms or speech synthesis. Author's abstract

1/1

USSR

FROLOV, G. D.

UDC: 8.74

"Some Properties of Audio Codes"

V sb. Tsifr. vychisl. tekhnika i programmir. (Digital Computer Technology and Programming--collection of works), vyp. 7, Moscow, "Sov. radio", 1972, pp 160-166 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V675)

Translation: An approximate method for automatic segmentation of a speech signal is described together with certain properties of audio codes which can be used in developing systems for automatic recognition of speech patterns or speech synthesis. Author's abstract.

1/1

USSR

UDC: 51:330.115

KRINITSKIY, N. A., MIRONOV, G. A., FROLOV, G. D.

"Formal Definition of a Certain Class of Complex Systems"

V sb. Nauch. i prakt. probl. bol'shikh sistem. Sekts. Bol'shiye sistemy. Teoriya, metodol., modelir. (Scientific and Practical Problems of Large Systems--collection of works. Large Systems Section. Theory, Methodology, Modeling), Moscow, "Nauka", 1971, pp 163-167 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V860)

Translation: The paper gives a formal definition of some complex systems in the class of potentially algorithmizable systems. The fundamental problem of study is formulated for this class of systems, and a way to solve it is pointed out. Authors' abstract.

1/1

USSR

UDC 518.5:681.3.06

ABRAMOV, V. I., FROLOV, G. D.

"Automatic Editing"

Tsifr. Vychisl. Tekhnika i Programmir. [Digital Computer Equipment and Programming -- Collection of Works], No 6, Moscow, Sovetskoye Radio Press, 1971, pp 48-54, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V636 by the authors).

Translation: An algorithm is presented which approximately solves the problem of automatic transfer of a portion of a word recorded in the Russian alphabet from one line to the next. Results are presented from machine experiments indicating the high reliability of the suggested transfer method.

1/1

USSR

UDC 338.247:621.318.1

FROLOV, G. I., and UTKIN, YU. V., Institute of Physics imeni L. V. Kirenskiy, Siberian Department of Academy of Sciences USSR

"Effect of Temperature on Dynamic Characteristics of Single-Crystal Ferrite Films"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 36, No 6, 1972, pp 1178-1180

Abstract: The article describes results of a study of pulsed magnetization reversal in single-crystal manganese ferrite films in the -180 to +200° C temperature range. It was found that a change in the temperature from -180 to +200° C decreases the magnetization reversal time by more than an order of magnitude in both the easy and the hard direction. The article considers the effect of temperature on threshold remagnetization fields and the resultant redistribution of the contribution of various remagnetization mechanisms.

1/1

USSR

UDC:669-405:538

SALANSKIY, N. M., FROLOV, G. I.

"Model of Pulse Switching of Thin Magnetic Films in Weak Fields"

Fiz. Magnitn. Plenok [The Physics of Magnetic Films -- Collection of Works], No. 2, Irkutsk, 1970, pp. 82-89 (Translated from Referativnyy Zhurnal Fizika, No. 11, 1970, Abstract No. 11 Ye 1320 by O. S. Kolotov)

Abstract: The process of pulse switching of thin permalloy films under the influence of a magnetic field applied along the axis of easy magnetization, the intensity of which varies over the range $H_c < H < 2H_k$, is studied (where H_c is the coercive force, H_k is the field of anisotropy of the specimen being studied). In order to produce information concerning the switching mechanism, along with the signal read from the longitudinal turn, the signal from an SHF detector recording the change in SHF susceptibility of the film being switched is studied. It is

1/2

USSR

UDC:669-405:538

SALANSKIY, N. M., FROLOV, G. I., Fiz. Magnitn. Plenok [The Physics of Magnetic Films -- Collection of Works], No. 2, Irkutsk, 1970, pp. 82-89 (Translated from Referativnyy Zhurnal Fizika, No. 11, 1970, Abstract No. 11 Ye 1320 by O. S. Kolotov)

demonstrated that the signal from the SHF detector is observed only when rotation mechanisms are present. Analysis of these signals is used to estimate the relative contribution of mechanisms of rotation of magnetization and displacement of domain walls. A switching model is suggested, based on these data. According to this model, at the beginning of the switching process, two-directional rotation of local magnetization vectors occurs, along with formation of a blocked domain structure. This is followed by switching of individual local sectors, which increase due to a 180°-wall displacement. The influence of film parameters on these stages of the switching process is studied.

2/2

USSR

UDC 681.3:519.2

FROLOV, G. M., All-Union "Order of the Red Banner of Labor" Scientific Research Institute of Railway Transportation

"A Device for Analyzing Random Processes"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 30, Oct 72, Author's Certificate No 354419, Class G, filed 8 Sep 69, published 9 Oct 71, p 147

Translation: This Author's Certificate introduces a device for analyzing random processes. The unit contains a modulator whose input is connected to the input terminal of the installation. The device also contains a memory unit whose inputs are connected respectively to first and second scaling circuits. The first inputs of the scaling circuits are connected to the outputs of a control unit. As a distinguishing feature of the device, the field of application is extended by adding a prestorage unit with its first input connected to the output of the modulator, its second input connected to the control unit, and its output connected to the corresponding input of the first scaling circuit. The modulator input is connected to an additional module for measuring durations. One output of this added module

1/2

USSR

FROLOV, G. M., USSR Author's Certificate No 354419

is connected to the corresponding input of the second scaling circuit, and the other output is connected to the input of the control unit.

2/2

1/2 020 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--ON THE VACUUM POLE IN QUANTUM ELECTRODYNAMICS -U-

AUTHOR-(03)-FROLOV, G.V., GRIBOV, V.N., LIPATOV, L.N.

COUNTRY OF INFO--USSR

SOURCE--PHYS. LETTERS (NETHERLANDS), VOL. 31B, NO.1, P.34-5 (5 JAN. 1970)

DATE PUBLISHED--05JAN70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--QUANTUM ELECTRODYNAMICS, ASYMPTOTIC PROPERTY, SCATTERING AMPLITUDE, APPROXIMATION CALCULATION, GAMMA SCATTERING, ELECTRON SCATTERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0074 STEP NO--NE/0000/70/031/001/0034/0035

CIRC ACCESSION NO--AP0102164

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0102164
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ASYMPTOTIC BEHAVIOR OF THE EE. ENU AND NUNU SCATTERING AMPLITUDES IS DETERMINED IN THE MAIN LOGARITHMIC APPROXIMATION. THE J PLANE SINGULARITIES IN THE CHANNEL WITH VACUUM QUANTUM NUMBERS ARE INVESTIGATED NEAR J EQUALS 1. FACILITY: A.F. IOFFE PHYS., TECH., INST., LENINGRAD, USSR.

UNCLASSIFIED

FROLOV, I.

JPRS 55440

15 March 1972

CONDITIONS FOR FLIGHT OF MARTIAN SPACE PROBES

Article by Candidate of Technical Sciences N. Arlazov and Engineer I. Frolov: "On a Trajectory of a Half-Billion Kilometers", Moscow, Kosmonavtika, Russian, No 2, February 1972, pp 32-33, 38)

After covering a distance of almost a half-billion kilometers in a complex curve between the orbits of Earth and Mars, the Soviet automatic stations became artificial Martian moons and the descent module of the "Mars-3" station for the first time in the history of cosmonautics made a soft landing on the Martian surface. A new and important step had been taken in studying the secrets of the outer planets of the solar system by the use of rocket-space systems.

Behind the laconic words of the TASS communication concerning the entry of the stations into a Martian satellite orbit and landing of the descent module on the planetary surface is hidden the solution of a great number of scientific-technical and organizational problems. Among them an important place was occupied by the problems involved in the delivery of the stations to Mars. The difficulties involved will be understandable if we turn to some of the peculiarities associated with preparations for and implementation of this experiment.

Present-day carrier-rockets do not have unlimited energy resources. Accordingly, in computations of the orbits of interplanetary flights it is important to choose the date of the launching, on which is dependent the energy expenditures necessary for the space vehicle to reach the planet. Launch-dates are possible approximately once in 25 months during periods of Martian opposition. For such specific flight it is necessary to compute the specific space vehicle propulsion velocity which may or may not correspond to the requirements of minimum energy expenditures. The "Mars-2" flight to its destination lasted 192 days, whereas the "Mars-3" flight lasted 188 days.

1/2 021 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--CHROMATOGRAPHIC ANALYSIS OF DIBORANE, SILANE, AND GERMANE FOR ORGANIC IMPURITIES -U-

AUTHOR-(05)-ZORIN, A.D., FROLOV, I.A., KARABANOV, N.T., KEDYARKIN, V.M., BALABANOV, V.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(2), 389-91

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--DIBORANE, SILANE, GERMANIUM COMPOUND, CHROMATOGRAPHIC ANALYSIS, CHEMICAL PURITY, ALKANE, ALKENE, ALDEHYDE, METHANOL, ETHANOL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2070 STEP NO--UR/0075/70/025/002/0389/0391

CIRC ACCESSION NO--AP0125657

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125657

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CHROMATOGRAPHIC METHOD WAS DEVELOPED FOR THE DETN. OF ORG. COMPDS. IN DIBORANE, SILANE, AND GERMANE WITH A SENSITIVITY OF 2 TIMES 10 PRIME NEGATIVE5-1.6 TIMES 10 PRIME NEGATIVE4 VOL. PERCENT. INZ-600, TND-FS-M, DIATOMITE BRICK WERE USED AS SOLID SUPPORTS FOR THE DETN. OF GERMANE, SILANE, AND DIBORANE, RESP.; THE LIQ. PHASE WAS SQUALENE, VASELINE OIL AND POLYETHYLENE GLYCOL-2000, TRICRESYL PHOSPHATE AND SQUALENE. N IS THE CARRIER GAS. INDUSTRIAL DIBORANE CONTAINS C SUB6 H SUB6, PROPYLENE, C SUB6 H SUB8, C SUB5 H SUB12, MECL, AND C SUB6 H SUB14. INDUSTRIAL SILANE CONTAINS C SUB4 H SUB10, ME SUB2 O, MEETO, ET SUB2 O, ETCL, ACETYLALDEHYDE, ME SUB2 CO, MEOH, ETOH, C SUB6 H SUB6, TRIETHOXY SILANE; INDUSTRIAL GERMANE CONTAINS CH SUB4, C SUB2 H SUB4, C SUB2 H SUB6, PROPYLENE, C SUB3 H SUB7, C SUB4 H SUB10, AND ISOBUTANE. FACILITY: SCI.-RES. INST. CHEM., GORKI STATE UNIV., GORKI, USSR.

UNCLASSIFIED

USSR

UDC 531/534:57

FROLOV, K. V. and POTEMKIN, B. A.

"The All-Union Symposium 'The Effect of Vibration on the Human Organism and Problems of Protection From Vibration' (Moscow-Levkiy, 3-6 Feb, 1972)"

Moscow, Izvestiya AN SSSR, Solid Body Mechanics No 4, 1972, pp 206 - 208

Abstract: The symposium was sponsored by the Academy of Sciences USSR, the All-Union Central Trade Union Council, the Ministry of Health of the USSR, and the Ministry of the Machine Tool and Tool Industry. One hundred and fifty scientists from 76 organizations attended and 70 reports were presented. The three primary sections were: 1) Some Mechanical Characteristics of the Human Body; 2) The Effect of Vibration on the Functional Systems of the Human Organism; 3) The Development of Systems to Protect Humans from Vibration. Round-table discussions were held on non-linear and transient properties of the dynamic characteristics of the human body, questions of predicting the effect of vibration on humans and the effect of vibration on the musculoskeletal system. The first session gave considerable attention to models of the human body, as well as to theoretical evaluation of simulation quality. Studies of various subunits of the human body, as well as the entire body, were reported.

The second session heard reports of complex clinical studies. Particular attention was given to mechanisms of humoral regulation, cellular circulation,

1/2

USSR

FROLOV, K. V. and POTEMKIN, B.A., Moscow, Izvestiya AN SSSR, Solid Body Mechanics No. 4, 1972, pp 206 - 208

biochemical indicators of blood coagulation , the effects of vibration on the endocrine glands and on the liver. The positive effects of vertical vibration in the treatment of kidney stones were reported.

The third session may be broken down into three subdivisions: Theoretical Aspects of Designing Effective Vibration Protection Systems and Design Principles; The Vibration-Insulating Properties of Various Materials; The Effectiveness of Protective Systems Used in Various Branches of Industry for Actual Machine Designs. Hydraulic and pneumatic mechanisms, single and multiple material barriers and mechanical devices were discussed.

The symposium covered vibration at all frequencies, from sounds to the action of pneumatic tools. The organization committee was directed to prepare for a following symposium "Man and Vibration" in 1973-1974.

2/2

1/2 031 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--SIMILAR SOLUTIONS TO THE BOUNDARY LAYER EQUATIONS FOR A SLENDER BODY OF REVOLUTION IN THE PRESENCE OF A POSITIVE PRESSURE GRADIENT -U-
AUTHOR-(03)-KOLESNIKOVA, L.M., FROLOV, L.G., SHMANENKOV, V.N.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA ZHIDKOSTI I GAZA, JAN.-FEB. 1970, P. 173-175.
DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SLENDER BODY, BOUNDARY LAYER EQUATION, PRESSURE GRADIENT, FLOW ANALYSIS, FLOW STABILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1455 STEP NO--UR/0421/70/000/000/0173/0175

CIRC ACCESSION NO--AP0112449
UNCLASSIFIED

2/2 031 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0112449

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYSIS OF SIMILAR SOLUTIONS TO THE BOUNDARY LAYER EQUATIONS IN THE PRESENCE OF A PRESSURE GRADIENT, UNDER THE ASSUMPTION THAT THE INFLUENCE OF THE TRANSVERSE CURVATURE OF THE SLENDER BODY ON THE FLOW IS NEGLIGIBLE. TWO FAMILIES OF VELOCITY PROFILES ARE OBTAINED, ONE OF WHICH IS CHARACTERIZED BY THE PRESENCE OF BLACKCURRENTS AT THE WALL. THE INFLUENCE OF THE TRANSVERSE CURVATURE OF THE BODY ON BOUNDARY LAYER SEPARATION AND ON THE INTEGRAL CHARACTERISTICS OF THE BOUNDARY LAYER IS EXAMINED.

UNCLASSIFIED

USSR UDC: 621.317.784

KARPOV, R. G., GRUZDEV, S. V., FROLIN, M. I., OSOKIN, V. I., DUBOVOY, N. D.

"An SHF Power Meter"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 19, 1970, Author's Certificate No 272400, p 50

Abstract: This author's certificate introduces an SHF power meter which contains a self-balancing bolometric bridge with an oscillator in the self-balancing circuit. As a distinguishing feature of the patent, the sensitivity of the meter is improved by using a pulse generator with constant amplitude and controllable prf as the oscillator. The modulation characteristic of this generator depends on the peak value of the amplitude of the controlling pulses.

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USSR UDC: 621.396.6-181.5

FROLOV, N. D., SAVEL'YEV, B. I.

"On the Problem of Evaluations of Surface Roughness in Microelectronics"

Elektron. tekhnika. Nauch.-tekhn. sb., Mikroelektronika (Electronic Technology. Scientific and Technical Collection. Microelectronics), 1970, vyp. 5(26), pp 78-83 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V156)

Translation: The authors discuss criteria for evaluation of surface roughness. It is shown that existing criteria are inadequate for evaluating the operational properties of working surfaces. Parameters are proposed for estimating the height and shape of microscopic irregularities and the nonuniformity of these irregularities. Resumé.

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USSR UDC 681.327

BEKKER, Ya. M., LUR'YE, Ye. V., and FROLOV, N. D.

"Chemical Pickling of Ferrites as a Technological Method of Creating Integral Memories"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Engineering. Scientific and Technical Collection. Microelectronics), 1970, vyp. 5 (26), pp 40-48 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 6, Jun 71, Abstract No 6 B285)

Translation: Results from studying the process of machining ferrite plates by the chemical pickling method are presented. The surface state and the pickling rate are investigated as functions of the nature of the pickling agent, its concentration, and temperature. It is pointed out that for a VT-2 type ferrite, the best pickling agent is a mixture of acids. The magnetic properties of the ferrite do not change during the pickling process. It is noted that chemical pickling can serve as the technological process used to create microholes and also complex designs and reliefs on the surfaces of ferrite plates. There are 9 illustrations and an 8-entry bibliography.

1/1

USSR

UDC 519.217

FROLOV, N. N.

"The Dirichlet Problem in a Hilbert Space"

Teoriya Veroyatnostey i Mat. Statist. Mezhved. Nauch. Sb., [Theory of Probabilities and Mathematical Statistics. Indepartmental Scientific Collection], 1970, Vol 22, No 2, pp 81-91, (Translated from Referativnyy Zhurnal Kibernetika, No. 5, 1971, Abstract No. 5V78 by the author).

Translation: The existence and uniqueness of a generalized solution of the Dirichlet problem for the equation

$$\frac{1}{2}\operatorname{Sp} A^*(x)\,U''(x)\,A(x)+(U'(x),\,a(x))=l(x)$$

in the open area of a separable Hilbert space are proven. The proof is based on construction of a Markov process in the Hilbert space. The problem of regularity of points on the boundary is studied.

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USSR

2

RUBENCHIK, YU.I., KROSHKIN, V.A., MEDINSKAYA, I.P., FROLOV, O.F., ZHERDEV, A.V., and VAYNTRAUB, S.S., VNIIPTkhimnefteapparatury and Kommunarsk Metallurgical Plant

"High-Strength Sheet Steel 10G2FR"

Moscow, Metallurg, No 8, Aug 71, pp 25-26

Abstract: On the basis of investigating 09G2S and 16GS low-alloy steels, melted in 100-kg induction and 3-ton electric furnaces, the optimum composition of 10G2FR steel was established. At the Kommunarsk Metallurgical Plant two heats were melted in 300-ton open-hearth furnaces by conventional technology and deoxidized with ferrosilicon, silicomanganese, and aluminum. The resulting slabs were rolled into sheet and the mechanical properties of the sheet were determined. Then the sheet was heat treated by heating to 930-950°C water quenching, and tempering at 660°C. In all cases the heat-treated sheet exhibited much greater mechanical properties for all thicknesses tested than were shown by the steel in the hot-rolled state. It was found that 10G2FR steel also possesses good weldability without pre-heating. At the Volgograd Petroleum Equipment Plant imeni Petrov the first batch of fabricated vessels were made of 10G2FR steel and are designated to be used under pressures of 8-55 kg/cm^2 at temperature down to -40°C.

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1/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--DETERMINATION OF THE EQUIVALENT PARAMETERS OF DEFORMED MIRROR ANTENNAS -U-

AUTHOR-(02)-NADENENKO, B.S., FROLOY, O.P.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROSVIAZ', VOL. 24, FEB. 1970, P. 20-24

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS--ELECTRON MIRROR, PAROBOLIC ANTENNA, ANTENNA PARAMETER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1174 STEP NO--UR/0106/70/024/000/0020/0024

CIRC ACCESSION NO--AP0120021

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120021

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF A METHOD FOR DETERMINING THE EQUIVALENT GEOMETRICAL PARAMETERS OF A DEFORMED PARABOLIC MIRROR ANTENNA ON THE BASIS OF KNOWN COORDINATES FOR SEVERAL POINTS ON THE REAL PROFILE OF THE REFLECTOR. THE CRITERION FOR DETERMINING THE EQUIVALENT PARABOLIC SURFACE IS THE ATTAINMENT OF A MAXIMUM SIGNAL AT THE POINT OF RECEPTION WHEN THE RADIATOR IS PLACED AT THE FOCUS OF THIS SURFACE. THE USE OF THE METHOD IS ILLUSTRATED BY NUMERICAL RESULTS OBTAINED FOR A REFLECTOR WITH 30 BY 30 M APERTURE DIMENSIONS.

UNCLASSIFIED

USSR
ENGINEERING
Aeronautical and Space

USSR

UDC 629.78.017.2

SADYKOV, F. R. and FROLOV, P. A.

"Search for Correcting Device Parameters in Complex Linear Systems"

Tr. Mosk. Aviats. In-ta (Works of the Moscow Aviation Institute), No 240, 1972, pp 46-52 (from Referativnyy Zhurnal--Raketostroyeniye, No 5, May 73, Abstract No 5.41.141 by the authors)

Abstract: One of the basic problems in the theory of automatic control is development of methods for synthesis of control systems which satisfy specified combinations of technical requirements. The problem of synthesis of linear systems of control can be divided into two steps. In the first step a rational structural diagram is prepared in which solution of the formulated problem is principally possible; type and point of inclusion of the correcting devices are determined. In the second step those numerical values are found for the parameters of the correcting devices which will satisfy the technical requirements set forth for the system. In the present article the use of methods of mathematical programming is examined for the second step of linear system synthesis. 5 bibliographic references.
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USSR

UDC: 378.1:681.31

KOZHUKHOV, V. D., Candidate of the Technical Sciences, FROLOV, S.D., and MYSHKO, Ye. I., Engineer

"Automatic Subsystem for Controlling Attendance and Grading of Students in the Technical VUZ Schools"

Kiev, Mekhanizatsiya i Avtomatizatsiya Upravleniya, No 6, 1973, pp 36-39

Abstract: A description is given of an automated system for controlling study processes in a VUZ subsystem. This system has been in operation since 10 November 1970 in the Kharkov Aviation Institute and since 20 December 1971 in the Kharkov Automobile Highway Institute. The purpose of the subsystem is to acquire and store information regarding the application of the educational process to, and the performance of, each student individually; to process and systematize it; and distribute it to the various departments, deans, directors, and societies in the form of special blanks. Samples of the blanks used are given. The electronic computer BESM-4 is the central equipment of the institution's control equipment. A description of the various cards and blanks and their functions is provided.

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USSR

UDC[621.362:538.4]:538.6.001.24

KOSTENKO, FROLOV, S.D.

"Analysis Of Supersonic Operating Conditions Of Magnetohydrodynamic Generator"

V sb. Teplotekhn.probl.pryamogo preobrazov.energii (Heat-Engineering Problems Of Direct Energy Conversion--Collection Of Works), Issue 2, Kiev, "Nauk.dumka," 1971, pp 29-37 (from RZh--Elektrotekhnika i energetika, No 12, Dec 1971, Abstract No 12A176)

Translation: The results are presented of a computed analysis of the supersonic operating conditions of a magnetohydrodynamic (MHD) channel, fulfilled by a one-dimensional approximation under equilibrium conditions of the flow of dissociated compressible gas, taking into account the friction and heat exchange in the channel walls, the effects of dissociation and recombination of the molecules and the variabilities of the thermophysical and electrical characteristics with respect to the length of the channel. The computations were fulfilled as applied to a MHD generator of the Faraday type with a sectionalized load, operating on the products of combustion of a stoichiometric mixture of TS-1 kerosene and enriched atmospheric oxygen (40-percent O_2). It is shown that from the standpoint of the specific power output, the supersonic flow regimes in the MHD channel are optimum, in the process of which the higher the total temperature of the gas the more optimum is the Mach number. The effect of the angle of the channel opening on the characteristics of the MHD generator is considered. 6 ill. 3 ref. [Khar'kov Aviation Institute]

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USSR

UDC 615.285.7.089.036.11.085.835.3

SAVATAYEV, N. V., BRESTKINA, L. M., TONKOPIY, V. D., POZHARISSKAYA, T. D., and FROLOV, S. F.

"Compressed Oxygen in the Treatment of Acute Chlorophos Poisoning"

Moscow, Farmakologiya i Toksikologiya, No 6, 1972, pp 738-741

Abstract: Injection of rats with the pesticide chlorophos (1000 mg/kg) produced the characteristic symptoms of organophosphorus poisoning in 10 minutes. Administration of oxygen under normal barometric pressure at this time had no effect on the symptoms, but it slightly increased the animals' survival time. On the other hand, oxygen under a pressure of 3 atm not only mitigated the course of the intoxication, but increased the survival time substantially. Atropine alone or administered in combination with oxygen 10 min after injection of chlorophos had no effect on the outcome of the poisoning, although it greatly relieved the symptoms. Compressed oxygen and atropine used separately 60 min after poisoning had no effect on the course or outcome, but when the two were used at the same time, they produced a marked therapeutic effect and a higher survival rate. Treatment of the animals with atropine and TMB-4 resulted in a 90 to 100% survival rate. And when the two agents were combined with oxygen, the animals were outwardly indistinguishable from controls after only 1 hour in the pressure chamber.

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USSR

UDC: 612.014.464-08:616-099

SAVATEYEV, N.V., Professor, Col Med Serv, TONKOPIY, V.D., Candidate of Medical Sciences, Capt Med Serv, and FROLOV, S.F.

"Oxybarotherapy of Some Acute Poisonings"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 2, 1970, pp 23-28

Abstract: This review of the Soviet and foreign literature shows that oxybarotherapy (hyperbaric oxygenation) is an effective method of treating acute carbon monoxide poisoning. Animal experiments indicate that it may also be effective in treating poisoning by methemoglobinformers, cyanides, and barbiturates. Some of the hazards connected with the use of oxygen under pressure are pointed out. Further research is needed to determine optimum regimes and indications for use in different kinds of poisonings.

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1/2 022 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--SURFACE HARDENING OF MALLEABLE CAST IRON -U-

AUTHOR-(03)-SHAPIRO, A.A., FROLOV, S.F., DANILINA, V.S.

COUNTRY OF INFO--USSR

SOURCE--LITEINOE PROIZVOD. 1970, (1), 36-7

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--CAST IRON, SURFACE HARDENING, ALLOY COMPOSITION, FATIGUE STRENGTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1741 STEP NO--UR/0128/70/000/001/0036/0037

CIRC ACCESSION NO--AP0118719

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118719

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TITLE SPECIMENS FROM 3 INDUSTRIAL MELTS (C 2.77-2.88, SI 1.07-1.37, MN 0.45-0.60, S 1.48-1.89, P 0.21-0.25, CR 0.06, AND NI 0.10-0.12 WT. PERCENT) WERE HARDENED ON THE SURFACE BY MEANS OF A HIGH FREQUENCY CURRENT. ALL SPECIMENS HAD INTERNAL TANGENTIAL COMPRESSION STRESSES AT 0.6-0.8 MM FROM THE SURFACE WITH THE MAX. AT THE SURFACE OF 22-5 KG-MM PRIME2. THESE STRESSES INCREASED THE ULTIMATE FATIGUE STRENGTH. WITH INCREASED AMT. OF FERRITE IN THE MATRIX (20-50 AND UP TO 100PERCENT) THE ULTIMATE FATIGUE STRENGTH INCREASED BY 20-35 AND UP TO 40PERCENT, RESP. THE INCREASED HOLDING TIME DURING NORMALIZING HAD THE FOLLOWING EFFECT: AFTER 15 MIN THE ULTIMATE FATIGUE STRENGTH INCREASED BY 48 PERCENT, AFTER 25 MIN, IT INCREASED BY 57PERCENT. THE OPTIMAL HEAT TREATMENT CONDITIONS WERE HIGH FREQUENCY CURRENT HARDENING WITH TEMPERING AT 300DEGREES.

UNCLASSIFIED

USSR

FROLOV, V., Head of Epidemiology Department, Ministry of Health SSR and IVANOV, G., Senior Department Inspector

"Once More on Influenza"

Moscow, Vechernaya Moskva, 9 Feb 70, p 2

Translation: According to reports of the World Health Organization, an influenza epidemic caused mostly by the A_2-Hong Kong 68 virus had spread to all the countries of Europe in December 1969. The British and French suffered the most. In Bulgaria and Rumania, the type B virus was responsible forthe outbreak in several cities. It was not only European countries that were in the clutches of the flu. There are reports that outbreaks of this type occurred in Israel and India.

In the Soviet Union, influenza and colds during the third trimester of 1969 were not more prevalent than usual for this time of the year. However, in the middle of the fourth trimester reports began to come in about viral influenza. Starting in mid-December there were indications of an increase in the number of flu cases in Moscow, Tbilisi, Karaganda, and Brest. This situation continued until 1/4

USSR

FROLOV, V., et al., Moscow, Vechernaya Moskva, 9 Feb 70, p 2

the first 10 days in January. Now there are outbreaks in other cities. Also, the structure of influenza is not unifrom. Along with cases caused by the A_2-Hong Kong 69 virus, there are others caused by the B strain. With few exceptions, it can be said that the outbreaks are not too violent because of the measures that have been taken to control them.

The incidence of influenza and colds is at a fairly high level in Moscow, especially among adults. School children are less affected.

The health agencies and other organizations are doing all they can to prevent the disease from spreading. The Ministry of Health USSR, together with the All-Union Central Council of Trade Unions, stated that as of 15 January, hospital cards for a period of up to 5 days would be issued to influenza patients at the initial request, with clinical symptoms the essential guide.

2/4

USSR

FROLOV, V., et al., Moscow, Vechernaya Moskva, 9 Feb 70, p 2

Considerable attention is being directed to the organization and execution of vaccination campaigns against the flu.

Extensive use is made of donor anti-influenza gamma globulin for prevention and treatment among children. A variety of sanitary and hygienic measures are also being implemented.

Our physicians do not as yet have available any chemical agents that can immediately kill the agent of influenza or the viruses responsible for diseases of the upper respiratory tract. However, the antibiotics and drugs like sulfadimezin, though they do not act directly on ciruses, nevertheless kill microbes, thus preventing complications and promoting a milder course of the disease.

Anti-influenza serum acts directly on the causative agent. It contains protective substances, antibodies that combat the pathogenic effect of the virus. The serum must be used at the very onset of the disease. It can also be used as a means of prevention by inhaling it once a day for several days in succession.
3/4

USSR

FROLOV, V., et al., Moscow, Vechernaya Moskva, 9 Feb 70, p 2

New drugs that may greatly reduce the incidence of influenza are now undergoing trials.

4/4

USSR

UDC 624.07:534.1

IVANOV, V. P. and FROLOV, V. A.

"The Oscillation of a Blade Rim With a Belt Connection"

Kuybyshev, Tr. Kuybyshev. aviats. in-t (Transactions of the Kuybyshev Aviation Institute), Vyp 51, 1972, pp 3-17 (from Referativnyy Zhurnal -- Mekhanika, No 4, 1973, Abstract No 4V376 by B. F. Shorr)

Translation: A system of equations of free oscillation for an elastic system consisting of a disk of arbitrary cross section with a rim and a blade, connected by a ring-shaped belt is produced by the"wave" dynamic pliability method (see Ivanov, V.P., Tr. Kuybyshev. aviats. in-t, Vyp 51, 1972). It is assumed that the order of cyclic symmetry equals the number of blades, that the disk is deformed only from its plane and that the blades buckle and twist. A matrix of the dynamic rigidity of the blades is assumed in the general form, making it possible to allow for the natural twisting of the blades. The connections are considered in the form of inertialess rods and belt strips under tension.

1/1

USSR UDC: 537.312.62

SAVITSKIY, Ye. M., BARON, V. V., FROLOV, V. A., KOZLOVA, N. D.

"Effect of Aluminum on the Superconducting and Mechanical Properties of Niobium and Titanium Alloys"

Moscow, Sverkhprovodyashchiye splavy i soyedin.--sbornik (Superconductive Alloys and Compounds--collection of works), "Nauka", 1972, pp 111-115 (from RZh-Radiotekhnika, No 12, Dec 72, abstract No 12D553 [résumé])

Translation: An investigation was made of alloys in the niobium-titanium--aluminum system in the ß-solid solution region adjacent to the niobium--titanium side with a constant ratio Ti/Nb = 45/55 and aluminum concentration up to 7.2% by weight. The introduction of aluminum reduces the superconductive transition point in the alloys in both the cast and annealed state. The critical current of the alloys is also reduced. The density of the alloys increases with introduction of aluminum, and there is little change in ductility. Three illustrations, one table, bibliography of seven titles.

1/1

USSR

UDC 669.293.5.296.537.312.62.539.374

SAVITSKIY, Ye. M., BARON, V. V., FROLOV, V. A., STARKOV, V. N., KORCHAGIN, P. A. ARKUSHA, T. I., OSIPOV, V. N., SERDYUKOV, Yu. A.

"Cathode-Ray Melting and Deformation of Superconducting Niobium-Zirconium Alloys Under Industrial Conditions"

Probl. Sverkhprovodyashch. Materialov [Problems of Superconducting Materials -- Collection of Works], Moscow, Nauka Press, 1970, pp.187-192. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 I785 by the authors).

Translation: Industrial modes of melting ingots 90 mm in diameter and weighing up to 45 kg in a cathode ray furnace by the method of double vacuum remelting, and modes of hot pressing of ingots into bars 50 mm in diameter and forging of pressed bars to 18-22 mm in diameter are developed for alloys of Nb with Zr. Bars produced by cathode ray melting, hot pressing,and forging are used to produce wire 0.2 mm in diameter, the mechanical and superconducting properties of which are measured. 2 figs; 16 biblio refs.

1/1

USSR UDC: 537.312.62

SAVITSKIY, Ye. M., BARON, V. V., FROLOV, V. A., STARKOV, V. N., KORCHAGIN, P. A., ARKUSHA, T. I., OSIPOV, V. N., SERDYUKOV, Yu. A.

"Electron-Beam Melting and Deformation of Superconducting Niobium-Zirconium Alloys Under Industrial Conditions"

V sb. Probl. sverkhprovodyashch. materialov (Problems of Superconducting Materials--collection of works), Moscow, "Nauka", 1970, pp 187-192 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D554)

Translation: Cycles for smelting ingots 90 mm in diameter weighing up to 45 kg in an electron-beam furnace by the method of double vacuum remelting, and schedules for hot-pressing the ingots into bars 50 mm in diameter and for forging the pressed bars to a diameter of 18-20 mm are worked out under industrial conditions for niobium-zirconium alloys. Wire 0.2 mm in diameter is made from the bars produced by the methods of electron-beam melting, hot-pressing and forging, and the mechanical and superconducting properties of this wire are measured. Two illustrations, bibliography of sixteen titles. Resumé.

1/1

USSR

UDC 533.9.08

LONGINOV, A.V., LITVINOV, A.P., KITEYEVSKIY, L.KH., NIZHNIK, G.YA., FROLOV, V.A.

"Syetem For Preliminary Ionization Of Gas In Closed Magnetic Traps"

Vestn. Khar'kov. politekhn. in-ta (Bulletin Of Kharkov Polytechnical Institute), 1970, No 50(98), pp 76-79 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1A238)

Translation: A system is described for preliminary ionization of gas in closed magnetic traps. The system includes a high-frequency pulse generator, a modulator, and a number of electron devices for control and monitoring. A special discharger for obtaining a short trailing edge is introduced into the generator. The following are the basic parameters of the system: power in a pulse, up to 500 kw; operating frequency, 100 kHz; pulse duration, to 5 microsec. 4 ill. 4 ref. Summary.

1/1

USSR

UDC 535.37

KNAB, O. D., MAGALYAS, V. I., FROLOV, V. D., SHVEYKIN, V. I., and SHMERKIN, I. A.

"Measurement of the Photoluminescence, Photoelectromotive Force and Electroluminescence of Semiconductor Materials and Structures"

Moscow, Pribory i Tekhnika Eksperimenta, No 4, Jul/Aug 71, pp 225-226

Abstract: The paper describes an installation for high-resolution measurement of the photoluminescence, photoelectromotive force and electroluminescence of semiconductor structures and materials. The device is based on the principle of normal reflection of a light beam. The exciting and receiving optical systems are combined to enable the use of short-focus objective lenses. This appreciably reduces the size of the light spot and thus increases resolution. The exciting and excited light are separated by a narrow-band interference filter. Placement of the surface of the specimen normal to the beam of incident light makes it possible to measure the photoelectromotive force and electroluminescence of diode structures.

1/1

USSR

UDC: 661.66+677

DERGUNOV, N. N., FROLOV, V. I., RIPP, N. Ye., SOSEDOV, V. P., BARABANOV, V. N.

"Toughening of Carbon Fiber Under Cyclic Loading"

Moscow, Doklady Akademii Nauk SSSR, Vol 210, No 1, 1 May 73, pp 70-71

Abstract: It was found that carbon fibers obtained by heat treating polyacrylonitrile filaments are toughened by cyclic stressing. The maximum toughening effect is observed when the maximum stress in a cycle is 60% of the ultimate strength of the fiber and 1000 cycles are used. The results are attributed to localized plastic deformation with resultant stress relaxation, as well as the crushing of fibrils. Increasing the number of stress cycles to 10,000 and the maximum stress in a cycle to 80% of the ultimate strength of a fiber brings the toughness of carbon filaments back to the original level. This is explained by an increase in cracks and pores.

1/1

USSR UDC: 621.375.421

FROLOV, V. I.

"On Calculating the Transistor Stages of a Wide-Band Amplifier With Mutual Correction of Distortions"

Tr. uchben. in-tov svyazi. M-vo svyazi SSSR (Works of Academic Institutes of Communications. Ministry of Communications of the USSR), 1970, vyp. 51, pp 184-189 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D136)

Translation: The author considers the dependence of amplifier circuit elements on the initial computational values of generalized parameters of stages with emitter high-frequency correction. An example is given of calculation of a pair of stages with mutual correction on a frequency band of 70 Miz. Resumé.

1/1

UDC 541.15

USSR

PARAMONOVA, V. I., VYSOKOOSTROVSKAYA, N. B., NIKOLAYEV, V. M., OSIPOV, S. V., and FROLOV, V. I.

"Effect of Internal Alpha-Irradiation on Characteristics of Anion Exchanger AV-23M"

Leningrad, Radiokhimiya, Vol 12, No 1, 1970, pp 127-132

Abstract: The article describes results of a study of the effect of internal alpha-irradiation dose on the capacity, basicity, swelling capacity, mechanical grain strength and solubility of vinylpyridine anion exchanger AV-23M, as well as the distribution of some fission products of Zr-95 + Nb-95, Ce-144 + Pr-141, Ru-106 + Rh-106. The isotope Pu-238 was used for irradiation. The principal result of the action of alpha radiation was found to be the breakdown of resin cross-linkage. This is manifested in increased swelling capacity and decreased grain strength. Internal alpha-irradiation of the resin results in its dissolution, with complete dissolution, according to estimates, setting in at a dose of about $(2.5 - 3.8) \cdot 10^4$ g·hr Pu-238/kg

1/3

USSR

PARAMONOVA, V. I., et al., Radiokhimiya, Vol 12, No 1, 1970, pp 127-132

absolutely dry resin.

At a maximum dose equal to $2.57 \cdot 10^8$ rad there is a more 10 percent decrease in capacity and practically no change in basicity. According to resultant data the capacity loss rate constant was estimated to be $K = (0.27 \pm 0.1) \cdot 10^{-9}$ rad^{-1} and the radiation-chemical reaction yield $G_0 = 1.18 \pm 0.45$ exchange groups/100 ev.

Dissolution of the resin and the decrease in its capacity result in the appearance of plutonium-238 in solution. Not less than 70 percent of the plutonium found in solution is oxidized to the hexavalent state.

Alpha-irradiation results in changed resin sorption characteristics. The amount of irreversibly sorbed plutonium increases with

USSR

PARAMONOVA, V. I., et al., Radiokhimiya, Vol 12, No 1, 1970, pp 127-132

irradiation dose, but even at the maximum dose it is an insignificant quantity (hundredths of a percent of the initially sorbed quantity of plutonium).

3/3

USSR

UDC 546.26.:536.21

VOLGA, V. I., FROLOV, V. I. and USOV, V. K.

"Thermoconductivity of a Carbon Fiber"

Moscow, Neorganicheskiye Materialy, Vol 9, No 4, Apr 73, pp 712-713

Abstract: Results are presented of measuring the coefficient of thermoconductivity of a carbon fiber, produced by carbonization of polyacrylonitrile in the 80-320° K temperature interval. The samples of carbon fibers were sequentially heat-treated at 1400, 2600, and 2800°C. The amount of nitrogen in a sample heated at 1400°C did not exceed 0.2% and at 2800°C--10^{-4}%. It was found that in the investigated temperature interval the thermoconductivity of a carbon fiber increases smoothly with increased temperature. In the heat treatment of carbon fibers the size of defect-free regions in the crystal lattice increases sharply, reaching the values of grain size characteristic for polycrystalline graphites. In the process of calculating grain sizes it was noted that the temperature at the start of the phonon-phonon interaction varies from 250°K for a sample heat treated at 1400°C down to 130°K for a sample heat treated at 2800°C. For most polycrystalline graphites this temperature is found in the limits of 110-130°K. 1 figure, 5 bibliographic references.

1/1

USSR

UDC 616.988.75(A-2)-092:612.118.221.2

FROLOV, V. K., SOKHIN, A. A., SOTNIK, A. Ya., and MOROZOVA, L. I., Donetskaya Oblast Epidemiological Station, Medical Institute, and Donetskaya Oblast Blood Transfusion Station, Donetsk

"A2 (Hong Kong) Influenza and the ABO and Rh Blood Groups"

Moscow, Voprosy Virusologii, No 6, 1972, pp 701-703

Abstract: A correlation was noted between ABO blood group and susceptibility to influenza among 2,289 patients with clinically diagnosed influenza and acute respiratory disease during the Jan/Mar 1970 A2 (Hong Kong) influenza epidemic in Donestskaya Oblast. Patients with blood groups O and AB were more susceptible to influenza than type A and B patients. A similar correlation was seen among 1,167 patients with serologically diagnosed influenza and among 72 influenza fatalities. Distribution of Rh factor was identical for patients and healthy individuals. Reasons for such correlation remain unknown.

1/1

USSR UDC 629.78.015.4

UKRAINTSEV, G. V., FROLOV, V. M.

"Method for Optimizing the Force Design of a Wing for Rigidity Under Variation by Distribution of the Relative Thickness of the Wing"

Uch. zap. Tsentr. aerogidrodinam. in-ta (Scientific Notes of the Central Aerohydrodynamic Institute), 1972, Vol. 3, No. 4, pp 65-76 (from RZh-41. Raketostroyeniye, No 11, Nov 72, Abstract No 11.41.126)

Translation: A method is proposed for optimizing the force design of a wing which produces a structure having the greatest bending rigidity by variation of the relative thickness of the wing and the greatest distribution function for thicknesses of the strengthening material under the condition of constant weight and satisfaction of certain aerodynamic limitations. 9 ill., Resume.

1/1

USSR

GRIB, A. A.; MOSTEPANENKO, V. M.; FROLOV, V. M. (Leningrad State University)

"Particle Production from a Vacuum by a Homogeneous Electric Field in Canonical Formalism"

Moscow, Teoreticheskaya i Matematicheskaya Fizika; December, 1972; pp 377-90

ABSTRACT: A study is made of particle production from a vacuum by a homogeneous electric field varying arbitrarily with time. Exact formulae are obtained for the probabilities of fermion and boson pair production by a method of diagonalization of the Hamiltonian with the aid of Bogolyubov transformations. These formulae are applied to particular cases. The vacuum of quasi particles for $t \to \infty$ is interpreted as a condensate of particle-antiparticle pairs with a total momentum equal to zero. Different classical characteristics of this condensate are examined.

The article includes 74 equations. There are 19 bibliographic references.

1/1

USSR

UDC 534.231.2

ALEKSEYEV, V. N., and FROLOV, V. M., Acoustics Institute of the Academy of Sciences USSR, Moscow

"Equations for Statistical Moments of a Wave Field in a Random Heterogeneous Medium"

Moscow, Akusticheskiy Zhurnal, Vol 18, No 4, Oct-Dec 72, pp 506-512

Abstract: Results obtained by V. I. Tatarskiy (Journal of Experimental and Theoretical Physics, 1969, Vol 56, No 6, pp 2106-2117) and L. A. Chernov (Ibid. 1969, Vol 15, No 4, pp 594-603) in form of functions for statistical field moments with random heterogeneities are extended for the case of arbitrary correlation between the wave length and the degree of heterogeneities. Integro-differential equations are deduced for statistical field moments of any order without imposed restrictions on the magnitude of field fluctuations, proceeding from the wave equation in the form $\Delta p + k^2[1 + \varepsilon(r)]\, p = 0$, where the characteristic of the medium $\varepsilon(r)$ is a random function. In special cases of small-scale and large-scale heterogeneities, the equations reduce to differential equations. A derived final function for the statistical moment of n-order is regarded as a system of equations for the determination of the statistical moment $\langle M_{ne} \rangle$ of the random field $p(r)$ as function of n variables. Estimates of made approximations are given. Twenty one formulas, three biblio. refs.
1/1

USSR

UDC: 621.372.413.001.24

FROLOV, V. N., AGRONOV, V. M.

"Construction of Interstage SHF Circuits With Optimum Frequency Response"

Tr. Novosib. elektrotekhn. in-ta (Works of the Novosibirsk Electrical Engineering Institute), 1970, vyp. 2, kn. 1, pp 78-89 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6B160)

Translation: Basic relationships are derived for calculating interstage SHF circuits by the Cohn method, which is based on the introduction of inverting circuits so that all resistors can be reduced to a common type (such as parallel). The resultant expressions can be used to design a complete interstage circuit with Chebyshev or Butterworth characteristics. Eight illustrations, bibliography of four titles. N. S.

1/1

USSR

UDC 621.317.311

PAVLOV, S. S., POGULYAYEVSKIY, YA. S., FROLOV, V. P.

"Autooscillator Direct-Current Amplifier for Measuring Small Direct Currents"

Avtomatiz. khim. proiz-v--V sb.(Automation of Chemical Production -- collection of works), vyp. 5, Moscow, 1970, pp 103-109 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4A273)

Translation: A study is made of some results of creating small current meters on the basis of varicaps which are used for conversion of DC signals to AC signals. A decrease in the zero drift effect on the measurement results is achieved. It is demonstrated that when using varicaps with a p-n-junction the meters have a sensitivity of up to $1 \cdot 10^{-12}$ amps, and when using surface varicaps, up to $1 \cdot 10^{-14}$ amps.

1/1

1/2 010 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--METRICS OF THE CLOSED FRIEDMAN WORLD PERTURBED BY ELECTRIC CHARGE, TO THE THEORY OF ELECTROMAGNETIC FRIEDMONS -U-

AUTHOR-(02)-MARKOV, M.A., FROLOV, V.P.

COUNTRY OF INFO--USSR

SOURCE--TEORETICHESKAYA I MATEMATICHESKAYA FIZIKA, 1970, VOL 3, NR 1, PP 3-17

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PARTICLE DISTRIBUTION, CHARGE DENSITY, MAXWELL EQUATION, ELECTRIC FIELD, ELECTRIC POLARIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1010 STEP NO--UR/0646/70/003/001/0003/0017

CIRC ACCESSION NO--AP0130048

UNCLASSIFIED

2/2 010 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0130048

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE GENERALIZATION IS CONSIDERED OF THE WELL KNOWN TOLMAN PROBLEM TO THE CASE OF ELECTRICALLY CHARGED DUST LIKE MATTER OF THE CENTRAL SYMMETRICAL SYSTEM. THE FIRST INTEGRALS OF THE CORRESPONDENT SYSTEM OF THE EINSTEIN MAXWELL EQUATIONS ARE FOUND. THE PROBLEM IS SPECIFICATED IN SUCH A WAY THAT WITH THE FULL CHARGE OF THE SYSTEM GOING TO ZERO, THE METRICS OF THE CLOSED FRIEDMAN WORLD ARISES. SUCH A SYSTEM IS CONSIDERED AT THE INITIAL MOMENT, THAT OF MAXIMAL ENLARGEMENT. WITH ANY NONVANISHING BUT NO MATTER HOW SMALL VALUE OF THE ELECTRIC CHARGE THE METRICS IS UNCLOSED. THE METRICS OF THE ALMOST FRIEDMANIAN PART OF THE WORLD ALLOWS THE CONTINUATION THROUGH THE NARROW MANHOLE (AT THE SMALL CHARGE) AS THE NORDSTROM REISSNER METRICS WITH THE PARAMETERS SQUARE TOOL OF XM SUBO EQUALS E SUBO. THE EXPRESSION FOR THE ELECTRIC POTENTIAL IN THE MANHOLE PHI SUBH EQUALS C PRIME2 SQUARE ROOT X DOES NOT DEPEND UPON THE VALUE OF THE ELECTRIC CHARGE. THE RADIUS OF THE MANHOLE (R SUBH EQUALS E SUBO SQUARE TOOT X OVER C PRIME2) INCREASES WITH THE INCREASE OF THE CHARGE. THE STATE OF THE MANHOLE AS GIVEN BY THE CLASSICAL DESCRIPTION APPEARS AS ASSENTIALLY UNSTABLE FROM THE QUANTUM PHYSICS VIEWPOINT. THE PRODUCTION OF VARIOUS PAIRS IN THE ENORMOUS ELECTRIC FIELDS OF THE MANHOLE GIVES RISE TO THE POLARIZATION OF THE LATTER UP TO EFFECTIVE CHARGE Z SMALLER THAN 137E IRRESPECTIVE OF THE INITIAL (NO MATTER HOW GREAT) CHARGE OF THE SYSTEM.

FACILITY: OB'YEDINENNYY INSTITUT YADERNYKH ISSLEDOVANIY.

UNCLASSIFIED

USSR

MARKOV, M. A., FROLOV, V. P.

"Metric of the Closed Friedman World Perturbed by an Electric Charge (On the Theory of Electromagnetic 'Friedmons')"

Moscow, Teoreticheskaya i Matematicheskaya Fizika, Vol 3, No 1, 1970, pp 3-17

Abstract: This article contains an investigation of a generalization of the known Tolman problem to the case of electrically charged powdered matter of a central-symmetrical system. The first integrals of the corresponding system of Enistein-Maxwell equations are found. Then the problem is specially defined in such a way that when the total charge of the system approaches zero, the closed Friedman world metric occurs. This system is investigated at the initial point in time and at the time of maximum expansion. For any electric charge as small as one might like, the metric turns out to be open. The metric of the almost-Friedman part of the world is continued via a narrow orifice by the Nordstroem-Reissner metric with the parameters $\sqrt{\chi} m_0 = e_0$. The expression for the electric potential in the orifice $\phi_h = c_2/\sqrt{\chi}$ does not depend on the value of the electric charge. With an increase in charge, the radius of the orifice ($r_h = e_0\sqrt{\chi}/c^2$) increases. The state of the orifice in the case of classifical description is 1/2

USSR

MARKOV, M. A., FROLOV, V. P., Teoreticheskaya i Matematicheskaya Fizika, Vol 3 No 1, 1970, pp 3-17

essentially unstable from the point of view of quantum physics. Generation of any type of pairs in the enormous electric fields of the orifice polarizes it to an effective charge $Z < 137e$ independently of how large the original charge of the material system was.

2/2

Acc. Nr.: AM0104086 Ref. Code: UR0000

Frolov, V. S.

Man in the Aircraft Control System (Chelovek v sisteme upravleniya samoletom)
Moscow, Voyenizdat, 1970, 125 pp (SL:2013)

TABLE OF CONTENTS:

...The book was written for the mass reader; it can be useful to aviator, as well as a wide circle of readers interested in achievements and future of aviation.

1/1

REEL/FRAME
19870479

AS
4

USSR

UDC 621.314.58 (088.8)

FROLOV, V.T., KOKOULINA, V.L. [Gor'kovsk. politekhn. in-t im. A.A.Zhdanova--Gor'kiy Polytechnical Institute imeni A. A. Zhdanova]

"Single-Phase Frequency Divider"

USSR Author's Certificate No 255399, filed 27 Mar 67, published 31 Mar 70 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B461P)

Translation: A frequency divider circuit is proposed which assures the feasibility of obtaining a wide band of output frequencies of sinusoidal form current. The transformer of the frequency divider is made with two cores. The primary winding of the transformer across a converter device made with thyristors is connected to a network [set'], the frequency of which is subject to the converter. The secondary winding is connected to a single-phase load. There is also a field winding, connected in series with a source of d-c voltage. All the windings are arranged on the two cores. Control of the thyristors originates from a control unit [blok] connected to the network. The frequency of the voltage on the primary winding of the transformer is two times smaller than the net frequency and the divider achieves a farther division of the frequency of another two times. The output frequency of the divider circuit is four times smaller than the frequency of the power network. In a divider circuit made with one thyristor, the primary windings of the divider are opposingly connected and the secondary--aiding connected. There are two capacitance-loaded windings also opposingly connected. The thyristor is connected to the first winding of the divider. Frequency divisions of 4 and 8 times are possible.4 ill.V.Sh.

1/1

USSR UDC 621.791.75

FROLOV, V. V., FLORINSKAYA, T. YA., ZHMURKIN, YU. A., and POKHVALENSKIY, D. YE., Moscow, Leningrad

"Hydrogen Distribution in the Heat-Affected Zone of an Alpha-Titanium Alloy with Consideration of the Thermal Diffusion Phenomenon"

Moscow, Fizika i Khimiya Obrabotka Materialov, No 4, Jul-Aug 73, pp 134-137

Abstract: The problem of the heterogeneous distribution of hydrogen in the wld joint of an alpha-titanium alloy was examined where the distribution was formed as a result of the phenomenon of thermal diffusion. The reason for the heterogeneity of hydrogen distribution was believed to be the establishment of isosteric pressure gradients due to the temperature relationship of the solubility coefficient k in the metal, which results in pressure drops and a new hydrogen distribution in the weld joint heat-affected zone. Pipe of the alpha-titanium alloy was welded to check the theoretical data with a hydrogen content in the alloy of 0.02% and in the welding rod -- 0.002%. After welding, the hydrogen content was determined and plotted against the distance from the end of the pipe. It was found that there are two sections with an increased content of hydrogen, above that of the initial pipe. The first section is found close to fusion line (2 mm from

1/2

USSR

PROLOV, V. V., et al., Fizika i Khimiya Obrabotki Materialov, No 4, Jul-Aug 73, pp 134-137

the center of the seam) and the second section -- in the heat-affected zone approximately 3 mm from the fusion line. The first section had a hydrogen content of just over 0.02 wt.% while the second section contained almost 0.03 wt.% hydrogen. Thus, the experimental data agree with the calculations and confirm the theoretical conclusions about the effect of thermal diffusion processes on hydrogen distribution in the heat-affected zone. Two figures, seven bibliographic references.

2/2

USSR

UDC 621.039.51.001.8

ARNOL'DOV, M. N., BOGATYREV, V. K., DUBOVSKIY, B. G., IVANOVSKIY, M. N., KALENICH, V. N., KIR'YANOV, G. I., MILOVIDOVA, A. V., FROLOV, V. V.

"Activation Control of Oxygen in Circulating Sodium-Potassium Coolant Using a Neutron Generator"

Tr. VNII radiats. tekhn. (Works of the All-Union Scientific Research Institute of Radiation Engineering), 1972, No. 7, pp 137-144 (from RZh-50. Yadernyye reaktory, No 11, Nov 72, Abstract No 11.50.93)

Translation: The first stage in carrying out continuous control of oxygen in a circulating loop with an Na-K alloy and a mockup of a nuclear reactor circuit is described. The basis of the method is the familiar reaction for determining oxygen on the basis of N^{16} (the reaction O^{16} (n, p) N^{16}). A small-scale neutron generator of the type NGI-5 with a flux of about $5 \cdot 10^8$ neutron/sec was used for activation.. This method for oxygen control on the basis of the N^{16} isotope is also applicable in the active loop of a nuclear reactor. 4 ill., 2 tables, 2 ref.

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USSR

UDC: 539.12.08

DMITRIYEVSKIY, I. M., KARAKOV, Ya. I., FROLOV, V. V., POTEMKIN, Ye. L.

"Tissue Doses of High-Energy Nucleons (up to 30 GeV)"

Moscow, Atomnaya Energiya, Vol 32, No 6, Jun 72, pp 465-470

Abstract: At the present time there are almost no data on the dose characteristics of high-energy nucleons, which means that there are no scientifically based data on the maximum permissible fluxes for emission of this type. Existing computations are based on the Monte-Carlo method and have been done for nucleons with energies of less than 2 GeV. Extension of methods of this type to higher energies involves difficulties due to the lack of information on the differential characteristics of nuclear interaction between nucleons and the elements of biological tissue. A simple method is proposed in this paper for calculating the depth distribution of absorbed and equivalent doses of high-energy nucleons normally incident on a tissue-equivalent phantom in the form of a plate 30 cm thick with infinite transverse dimensions. The distribution function for shower particles on the phantom is found by a perturbation theory method, using

USSR

DMITRIYEVSKIY, I. M. et al., Atomnaya Energiya, Vol 32, No 6, Jun 72, pp 465-470

the angular and energy distributions of the shower particles in the Trilling formula. The averaged characteristics of nuclear interaction (average multiplicity of secondary particle production, average energy of excitation of residual nuclei, and so forth) are used for conversion from the distribution function found for the shower particles to dose distributions. This approach cuts down appreciably on the volume of computations and is justified in that existing theories of nuclear interaction and experiments give the most reliable data in just this case (i. e., averaged characteristics). Besides, the very concept of dose involves an averaged characteristic. Depth dose distributions are found for protons and neutrons with energies of 3, 5, 10, 20, and 30 GeV. The dose approximately doubles with an energy increase from 3 to 30 GeV. The results agree with calculations of other authors for energies up to 3 GeV.

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USSR

UDC: 53.07/.08+53.001.5

DMITRIYEVSKIY, I. M., SEMENOV, Yu. V., FROLOV, V. V.

"A Method of Determining the Coefficient of Quality and Equivalent Dose in Mixed n-γ Fields"

V sb. Vopr. dozimetrii i zashchity ot izluch. (Problems of Dosimetry and Radiation Shielding--collection of works), Moscow, Atomizdat, vyp. 12, 1971, pp 53-56 (from RZh-Fizika, No 4, Apr 72, Abstract No 4A697)

Translation: The paper describes a method of determining the equivalent dose of neutrons and the quality coefficient of neutron radiation. Three ionization chambers are used: a tissue-equivalent chamber (current $I_{n+\gamma}$); a tissue-equivalent chamber with walls covered on the inside by a thin layer of conductive material containing no hydrogen (current $I_{n'+\gamma}$); and a chamber with aluminum walls (current I_{γ}). A loss of energy of the recoil protons leaving the walls of the chamber takes place in the layer of material which contains no hydrogen. The fraction of energy lost depends on the maximum mean free path of the protons and is thus related to the quality coefficient. It is found that the quantity $(1-\gamma)$ is a linear

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USSR

DMITRIYEVSKIY, I. M. et al., Vopr. dozimetrii i zashchity ot izluch., Moscow, Atomizdat, vyp. 12, 1971, pp 53-56

function of the quality coefficient, where $\gamma = (I_{n+\gamma} - I_{\gamma})/(I_{n'+\gamma} - I_{\gamma})$. The fraction of photon radiation is determined from I_{γ}. The neutron dose D_n is determined from $(I_{n+\gamma} - I_{\gamma})$. The equivalent dose is defined as the product of the neutron dose and the quality coefficient, where the quality coefficient is a function of $(1-\gamma)$. The accuracy of determining the quality coefficient is evaluated at ±30%. The ionization chambers are used in the saturation current mode. The method is distinguished by simplicity and a wide range of measurable dose rates. A. V.

2/2

USSR

UDC 621.701:669.295:620.192.47

IVANNIKOVA, A. D., Candidate of Technical Sciences, FROLOV, V. V., Doctor of Technical Sciences, and VERCHENKO, V. R., Candidate of Technical Sciences

"Pore Formation Attributed to Decarbonization of Pool in Welding of Titanium Alloys"

Moscow, Svarochnoye Proizvodstvo, No 8, Aug 71, pp 59-61

Abstract: The authors undertook to determine the effect of individual gases and carbon on pore formation in the seams of titanium alloys by comparing variations in experimentally determined hydrogen, oxygen, and carbon concentrations of the pool metal with variations in the seam porosity as a result of the differentiated addition of these elements to the base metal or the arc zone. VT1 sheet titanium and the α-alloy OT4 were used for the experiments. The gas content of the metal was determined by spectral analysis, the carbon content by chemical analysis. The equilibrium heterogeneous system Ti-C-O was used to consider the pool decarbonization process. It was found that the porosity of welded seams increases on the burning-out of the carbon in the

USSR

IVANNIKOVA, A. D., et al., Svarochnoye Proizvodstvo, No 8, Aug 71, pp 59-61

pool. A calculation of the possibility of pore formation showed that the carbon monoxide forming in the welding pool can lead to the appearance of reaction pores. The experimental determination of the gas composition of the pores confirmed that they contain carbon monoxide.

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UDC: 536.2.001.24

USSR

FROLOV, V. V.

"Computing Temperature Fields in Multilayer Shells"

Moscow, Izvestiya Akademii Nauk SSSR--Energetika i Transport, No. 4, 1971, pp 112-121

Abstract: The author considers the problem of the heat conductivity in a multilayer shell in the form of a body of rotation. The generatrix of the body's inner surface is assumed to be smooth and convex. The boundary conditions which the solution to the problem must satisfy at the outer and inner surfaces of the shell depend on the forms of thermal interaction of the shell and the outer environment and between the shell and its contents. A method of numerical solution is proposed in which the solution of the boundary problem separates into two independent parts, one for the inner thermal conductance of the shell, the other for the outer conductance. As an example of this method, the author chooses the problem of the field of radiational fluxes acting on the external surface of the satellite of a spherical planet. He also computes the temperature fields in cylindrical and double-layered shells.

1/2 023 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--DOSE FIELD CREATED BY PROTON BEAM IN THE IRRADIATED BODY -U-

AUTHOR-(05)-VAYNBERG, M.SH., DMITRIYEVSKIY, I.M., SEMENOV, YU.V., TELKOV, YU.M., FROLOV, V.V.

COUNTRY OF INFO--USSR

SOURCE--MEDITSINSKAYA RADIOLOGIYA, 1970, VOL 15, NR 5, PP 69-73

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MEDICAL APPARATUS, PROTON RADIATION BIOLOGIC EFFECT, RADIATION DOSAGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/1959 STEP NO--UR/0241/70/015/005/0069/0073

CIRC ACCESSION NO--AP0120602

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0120602
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE METHOD OF CALCULATION OF DOSE FIELDS CREATED IN THE IRRADIATED BODY BY A MEDICAL PROTON BEAM OF THE LABORATORY OF NUCLEAR PROBLEMS OF THE JOINT INSTITUTE FOR NUCLEAR RESEARCH IS DISCUSSED. THE RESULTS OF THE EXPERIMENT CONCERNED WITH THE DETERMINATION OF THE INFLUENCE ON THE DOSE FILED OF HETEROGENEITIES AND CURVATURE OF THE BODY SURFACE ARE GIVEN. FACILITY: OTDEL RADIOLOGII INSTITUTA EKSPERIMENTAL'NOY I KLINICHESKOY ONKOLOGII AMN SSSR. FACILITY: MOSKOVSKIY INZHENERNO-FIZICHESKIY INSTITUT.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--11SEP70.

TITLE--THE DEVELOPMENT AND INTRODUCTION OF ELECTRONIC COMPUTING EQUIPMENT -U-

AUTHOR--LEMESHCHUK, P.K., SOKOLOV, V.F., DELRIO, B., FROLOV, V.YA.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, ZHELEZNODOROZHNYY TRANSPORT, NO 1, JAN 70, PP 40-47

DATE PUBLISHED----JAN70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--COMPUTER APPLICATION, RAILWAY NETWORK, DIGITAL COMPUTER, COMPUTER CENTER, COMPUTER TECHNOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/0063 STEP NO--UR/0232/70/000/001/0040/0047

CIRC ACCESSION NO--AP0108431

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11SEP70

2/2 021

CIRC ACCESSION NO--AP0108431

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS ARTICLE IS THE FIRST PART OF A TWO PART TREATMENT OF DEVELOPMENTS IN THE UTILIZATION OF ELECTRONIC COMPUTERS AND RELATED EQUIPMENT IN THE USSR RAILROAD SYSTEM. AFTER AN INTRODUCTORY PORTION, IN WHICH THE AUTHORS MENTION, AMONG OTHER THINGS, THAT THERE ARE PRESENTLY MORE THAN 30 ELECTRONIC DIGITAL COMPUTERS IN OPERATION ON SOVIET RAILROADS, THE ARTICLE IS DIVIDED INTO THE FOLLOWING SELFEXPLANATORY SECTIONS: THE DIRECTION OF THE USE OF ELECTRONIC DIGITAL COMPUTERS IN TRANSPORTATION; RAILROAD COMPUTER CENTERS; INFORMATION AND PLANNING SYSTEMS; PARENTHESIS AND PARENTHESIS THE MAIN COMPUTER CENTER OF THE MINISTRY OF RAILWAYS.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--THE DEVELOPMENT AND INTRODUCTION OF ELECTRONIC COMPUTING EQUIPMENT IN RAILROAD TRANSPORT -U-
AUTHOR-(04)-LEMESHCHUK, P.K., SOKOLOV, V.F., DELRID, B., FROLOV, V.YA.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, ZHELEZNODOROZHNYY TRANSPORT, NO 2, FEB 70, PP 42-48

DATE PUBLISHED----FEB70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--COMPUTER APPLICATION, AUTOMATIC CONTROL SYSTEM, RAILWAY TRANSPORTATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1444 STEP NO--UR/0232/70/000/002/0042/0048

CIRC ACCESSION NO--AP0107892

UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0107892

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS ARTICLE IS THE SECOND PART OF A TWO PART TREATMENT OF DEVELOPMENTS IN THE UTILIZATION OF ELECTRONIC COMPUTERS AND RELATED EQUIPMENT IN THE USSR RAILROAD SYSTEM. THE FOLLOWING SUBJECTS ARE DISCUSSED: CREATION OF A LONG DISTANCE DATA TRANSMISSION NETWORK; THE AUTOMATIC READING OF INFORMATION FROM MOVING ROLLING STOCK; THE "AVTODISPETCHER" SYSTEMS FOR THE DIRECT CONTROL OF STATIONS AND SECTIONS; THE "EKSPRESS" SYSTEM FOR THE AUTOMATION OF PRODUCTION PROCESSES CONNECTED WITH SPACE RESERVATION AND THE SALE OF TICKETS, ETC., FOR LONG DISTANCE PASSENGER TRAINS; THE LEMESHCHUK, P. K., ET AL., ZHELEZNODOROZHNYY TRANSPORT, NO 2, FEB 70, PP 42-48 SOFTWARE FOR A SYSTEM FOR THE AUTOMATED CONTROL OF THE TRANSPORTATION PROCESS; THE REQUIREMENTS IMPOSED ON COMPUTING EQUIPMENT; AND THE TRAINING OF PERSONNEL.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--VASCULAR PATHOLOGY -U-

AUTHOR-(03)-ZAKHAROVA, G., FROLOV, YE., TSVETKOVA, N.

COUNTRY OF INFO--USSR

SOURCE--MEDITSINSKAYA GAZETA, OCTOBER 2, 1970, P 3, COLS 1-4

DATE PUBLISHED--02OCT70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CARDIOVASCULAR SYSTEM, SURGERY, MEDICAL FACILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605038/B09 STEP NO--UR/9034/70/000/000/0003/0003

CIRC ACCESSION NO--AN0142472

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--11DEC7

CIRC ACCESSION NO--AN0142472

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE REVIEWS THE FUNCTIONS OF THE CLINIC OF HOSPITAL SURGERY OF THE SARATOV MEDICAL INSTITUTE, WHICH IN THE COURSE OF THE LAST 15 YEARS SERVED AS A CENTER FOR TREATING PATIENTS WITH DAMAGED OR DISEASED VESSELS OF EXTREMITIES. A SPECIAL DEPARTMENT WAS ESTABLISHED IN 1968 FOR TREATING PATIENTS WITH AFFLICTED PERIFERAL VESSELS. THE DEPARTMENT OPERATES A FUNCTIONAL DIAGNOSTICS LABORATORY, DOES BIOCHEMICAL ANALYSIS, AND RUNS CHECKS OF THE PHYSICAL PROPERTIES OF BLOOD WHICH IS IMPORTANT FOR OPERATIONAL AND POSTOPERATIONAL PERIODS. THE ASSOCIATES OF THE CHAIR OF HOSPITAL SURGERY HAVE BEEN EXPLORING FOR MANY YEARS THE PROBLEMS IN DIAGNOSTICS, PATHOGENESIS AND TREATMENT OF OBLITERATING "ENDARTHERIETE" THE RESULTS AND THE RECUMMENDED TREATMENTS ARE DESCRIBED. ANOTHER SUBJECT, THE RECONSTRUCTION SURGERY OF VESSELS, HAS BEEN UNDER STUDY FOR THE LAST TEN YEARS. THE EXPERIENCE IN SURGICAL TREATMENT OF PATIENTS WITH PATHOLOGICAL AND DAMAGED VESSELS OF EXTREMITIES HAS MADE IT POSSIBLE TO START WORK IN OTHER AREAS OF VASCULAR SURGERY. FACILITY: HEAD OF THE CHAIR OF HOSPITAL SURGERY OF THE SARATOV MEDICAL INSTITUTE, SMCLN. FACILITY: HEAD OF THE VASCULAR DEPARTMENT OF THE CLINIC, SMCLN. FACILITY: REGIONAL DEPARTMENT OF PUBLIC HEALTH.

UNCLASSIFIED

USSR UDC 693.5:666.9.017:536.4.001.57

FROLOV, YE. M., Candidate of Technical Sciences

"Modeling of Thermal Stressed State in Massive Concrete Structures in the Presence of Their Surface Temperature Variation"

Moscow, Gidrotekhnicheskoye Stroitel'stvo, No 10. 1971, pp 32-36

Abstract: A modeling technique for determining thermal stressed state in massive concrete structures subjected to periodically changing temperatures, by studying phenomena on heated models, developed at the Engineering Structures Department of the Leningrad Polytechnic Institute imeni M. I. Kalinin, is described. Quality and reliability of the results obtained depends largely on the selection of materials, which must satisfy a series of requirements. The method of regular regime and the method of temperature waves were used for measuring the thermal conductivity. Compositions of various epoxy compounds which appeared to be best suited materials for modeling, as well as their physical properties are presented in tables. A specially designed heater for generating temperature fluctuations on model surface is described, and a schematic diagram of one of the model is presented. Stress distribution on various models at temperature variations on model surfaces are plotted in graphs and analyzed. They show that the technique developed here can be

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USSR

FROLOV, YE. M., Gidrotekhnickeskoye Stroitel'stvo, No 10, 1971, pp 32-36

applied to modeling of thermal stressed state of concrete dams and their structural elements in service.

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UDC 547.962

USSR

LIKHTENSHTEYN, G. I., EROLOV, YE. N., NESNAYKO, N. F., LEVCHENKO, L. A., and SKLYAR, YU. S., Institute of Chemical Physics, Academy of Sciences USSR Moscow

"An Investigation of the Structure of a Modeled Iron-Sulfur Protein by the Method of Spin and Luminescence Labels"

Moscow, Molekulyarnaya Biologiya, Vol 6, No 2, Mar/Apr 72, pp 201-209

Abstract: The research described in the present article concerned the problem of the mutual arrangement and interaction of iron ions in iron-sulfur proteins. Artificial iron-sulfur proteins, synthesized from human serum albumin, were analyzed by the method of spin and luminescence labels, with the aid of an electron microscope, paramagnetic sound, nuclear gamma-resonance, and analytic ultracentrifugation in the density gradient. The spin label method is based on the specific reaction of the iron- and sulfur-containing centers of the given proteins with a paramagnetic iminoxyl derivative of n-chlormercurobenzoate. The luminescence labels method is based on the phenomenon of the migration of energy via an inductive-resonance mechanism between luminescence donor centers and luminescence-extinguishing acceptor centers. The results obtained by both methods indicate that the iron ions do not act as individual active centers, but instead form a

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USSR

LIKHTENSHTEYN, G. I., et al., Molekulyarnaya Biologiya, Vol 6, No 2, Mar/Apr 72, pp 201-209

polynuclear complex which participates in catalysis as a single unit. This appears to be an extemely general characteristic of nonhemin enzymes and carriers.

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USSR

UDC 154.2+577.17

MAKARENKO, Yu. A., and FROLOV, Ye. P., Laboratory of Developmental Physiology, Institute of Pediatrics, Academy of Medical Sciences, USSR, Moscow

"The Level of Blood Mediator Components in Rabbits in Emotional States of Differing Biological Character"

Leningrad, Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, Vol 59, No 9, Sep 73, pp 1397-1402

Abstract: The blood level of the catecholamines, acetylcholine, serotonin and leukocytes was studied in 30 adult, alert rabbits during positive and negative stimulation for 30 minutes. The positive auto-stimulation was by means of electrodes inserted in the hypothalmic lateral nucleus, while negative avoidance stimulation used electrodes in the medial group of hypothalamic nuclei. An increase in the catecholamine concentration and smaller decreases in the amounts of acetylcholine and leukocytes were typical observations for the negative emotional state. During positive emotions an increase in acetylcholine concentration and the number of leukocytes, and a decrease in serotonin level were noted. In both cases a reverse aftereffect was also seen. The authors conclude that the positive state is not simply the opposite of the negative, or stress, state, but the activation of an independent mechanism.

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USSR UDC 621.317.799:538.569.4

AKVILONOVA, A. B., GORELIK, A. K., KALASHNIKOV, V. V., KRYLOVA, M. S., KUTUZA B. G., KUKHARSKAYA, N. F., MITNIK, L. M., PUZANOV, V. A., and FROLOV, Yu. A.

"Measuring the Full Absorption in a Cloudless Atmosphere in the 0.55-0.59 Range"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses--collection of works) "Nauka," 1972, pp 8-11 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A422)

Translation: Experimental data is given on the full absorption of radio waves in a cloudless atmosphere in the 0.55-0.59 cm range, with simultaneous recording of vertical profiles for temperature, pressure, and humidity at the observation point. Resume

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USSR

UDC 621.371:538.569.4

ABLYAZOV, V. S., BASHARINOV, A. Ye., GORELIK, A. G., GORDON, Z. I., KALASHNIKOV, V. V., KUTUZA, B. G., MITNIK, L. M., PENYAZ', L. A., FROLOV, A. V., and FROLOV, Yu. A.

"Absorption and Radiation of the Atmosphere in the 0.5-10 cm Range"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses--collection of works) "Nauka," 1972, pp 3-7 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A309)

Translation: The method and the results of measuring the absorption and radiation of the atmosphere for waves of 0.5-10 cm and, in particular, in the absorption bands of oxygen and water vapor, are given. The measurements were made for the purpose of investigating the propagation of uhf waves under various meteorological conditions, which were recorded simultaneously with the radio measurements. Curves are given of the attenuation and radio brightness temperature for rain clouds. Two illustrations, bibliography of five. N. S.

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USSR

UDC 542.61:546.212

FROLOV, Yu. G., SERGIYEVSKIY, V. V., and ZUYEV, A. P., Moscow Chemico-Technological Institute imeni D. I. Mendeleyev

"A Study of the Hydration of Certain Neutral Organophosphorus Compounds"

Ivanovo, Khimiya i Khimicheskaya Tekhnologiya, Vol XV, No 1, 1972, pp 59-62

Abstract: The role of water dissolved in the organic phase during the extraction is quite unexplained in a number of cases, though this does not negate the idea that the hydration of reagents has a strong influence on extraction equilibrium. In this connection, the dependence of water solubility, in solutions of 10 different organophosphorus compounds in toluene, on water activity, was studied. The solubility-activity relationship was determined by the isopiestic method developed by the authors (Radiokhimiya, 13, 760, 1971). Water concentration in the organic solutions was determined by electrometric titration, using Fischer's reagent. All 10 cases showed that the analytical concentration of water in the organic phase is linearly dependent on activity in an aqueous solution. Magnitudes of the distribution constants and the correlation factors calculated by the method of least squares, were determined. It is concluded that the demonstrated relationship between solubility and activity of water disproves the previously held belief in the formation of

USSR

FROLOV, Yu. G., et al., Khimiya i Khimicheskaya Tekhnologiya, Vol XV, No 1, 1972, pp 59-62

stoichiometric compounds between water and reagent molecules; also, that the logarithm of the distribution constants for water correlates linearly with the sum of the Kabachnik substituents for the 10 compounds studied.

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USSR UDC 533,95:583.4

GORELOV, V. A., and FROLOV, Yu. K.

"Measurement of Air Temperature Behind a Shock Wave by the Reversal of Spectrum Method in a Discharge Shock Tube"

V sb. Teplofiz. svoystva nizkotemperaturn. plazmy (Physical Properties of a Low-Temperature Plasma -- Collection of Works), Moscow, "Nauka," 1970, pp 48-52 (from RZh-Fizika, No 4, Apr 71, Abstract No 4G46)

Translation: The air temperature behind strong shock waves in a diaphragmless discharge shock tube was measured by a generalized reversal of the spectrum method on the basis of the barium ion line $\lambda = -4554$ Å. The temperature measured agrees satisfactorily with the calculated values. Authors abstract.

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1/2 042 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--MEASUREMENT OF TEMPERATURE BEHIND THE FRONT OF A STRONG SHOCK WAVE IN AN ELECTRIC DISCHARGE SHOCK TUBE -U-
AUTHOR-(02)-GORELOV, V.A., FROLOV, YU.K.

F

COUNTRY OF INFO--USSR

SOURCE--ZH. TEKH. FIZ. 1970, 40(4), 825-32

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SHOCK TUBE, TEMPERATURE, MEASUREMENT, STRONG SHOCK WAVE, ELECTRIC DISCHARGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/0104 STEP NO--UR/0057/70/040/004/0825/0832

CIRC ACCESSION NO--AP0127730
UNCLASSIFIED

2/2 042 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0127730

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SHOCK WAVE WAS PRODUCED BY A CAPACITY DISCHARGE THROUGH A THIN WIRE COVERED WITH BACL SUB2 IN A DIAPHRAGM FREE DISCHARGE TUBE. INITIAL AIR PRESSURE IN THE TUBE VARIED BETWEEN 0.3 AND 1 TORR, THE SHOCK WAVE VELOCITY ATTAINED 4-9 KM-SEC. UNDER THESE CONDITIONS, THE SHOCK WAVE FRONT IS SEPD. FROM THE COLLIDING GAS DISCHARGE PLASMA AND A REGION OF SHOCK HEATED GAS EXISTS. THE TEMP. WAS MEASURED BY USING THE METHOD OF THE INVERTED SPECTRAL LINE (BA II 4554 ANGSTROM LINE). THE METHOD WAS EXTENDED TO THE REGION OF LOW GAS DS. OF P EQUALS 10 PRIME5 NEGATIVE G-CM PRIME3. TIME RESOLN. WAS 1.5-2 TIMES 10 PRIME6 NEGATIVE SEC. THE DEPENDENCE OF THE TEMP. ON SHOCK WAVE VELOCITY AND THE TIME BEHAVIOR OF THE TEMP. IS SHOWN.

UNCLASSIFIED

UDC 535.33/34

USSR

YAKUTINA, O. A., RATOVSKIY, G. V., TIMOKHIN, B. V., and FROLOV, Yu. L., Irkut State University and Irkut Institute of Organic Chemistry, Siberian Branch, Academy of Sciences USSR

"Spectral Evidence for the Reaction of Trivalent Phosphorus With Unsaturated Systems. I. Ultraviolet and Raman Spectra of Phenyldialkylphosphines"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 8, 1972, pp 1733-1738

Abstract: The donor and the acceptor characteristics of phosphorus reactions with phenyl radicals were made by measuring the integrated intensity of bonds in the 1000 to 1600 cm^{-1} range of the Raman spectra and the UV spectra in the neighborhood of 220-280 mm. Both p_π-p_π and p_π-d_π interactions occurred. The introduction of the dialkylphosphine into a compound containing a benzene ring increased the integrated intensity at 1600 cm^{-1} (I_{1600}^{∞}) five times. Parasubstitution of chlorine increased I_{1600}^{∞} more than that of the methoxy group. The methoxy group had a greater influence on the I_{1600}^{∞} of triphenylphosphine than on the phenyldialkylphosphine. The UV spectra of phenyldialkylphosphines in the 260 mm region indicate that phosphorus tends to share its unshared electron during electronic excitation. Spectra in the 220-230 mm region in acid solutions indicate a transfer of charge to the vacant P orbitals.

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USSR UDC 535/33/.34:539.18

YAKUTINA, O. A., RATOVSKIY, G. V., FROLOV, YU. L., SERGIYENKO, L. M., ROZINOV, V. G., Irkutsk University, Irkutsk Institute of Organic Chemisty

"Spectral Study of the Mutual Effect of Functional Groups in Molecules of Tertiary Aromatic Phosphines"

Kiev, Teoreticheskaya i Eksperimental'naya Khimiya, Vol 7, No 4, 1971, pp 514-519

Abstract: At this time there is no single view of the reaction between structural groups within molecules of aromatic phosphines, and the various assumptions made about them lead to contradictions in the interpretation of the electron transitions.

The authors studied electron and Raman spectra for the group $(p\text{-}X_6H_4)P$, where X = H, CH_3, OCH_3, OC_2H_5, Cl, $Si(CH_3)$, and $N(CH_3)_2$, and also for molecules of $(C_5H_4)_3P(O)$, $(C_6H_5CH_2)_3P(O)$ and finally, $(m\text{-}NO_2C_6H_4)P(O)$.

The reaction was assumed to take place both by the $p\pi$-$p\pi$ transi-
1/1 tion and the $p\pi$-$d\pi$ transition mechanisms.

USSR

RATOVSKIY, G. V., DOROKHOVA, V. V., FROLOV, YU. L., GRECHKIN, YE. F., and KALABINA, A. V., Irkutsk State University imeni A. A. Zhdanov, Irkutsk, Ministry of Higher and Secondary Specialized Education RSFSR; Irkutsk Institute of Organic Chemistry, Irkutsk, East Siberian Affiliate, Siberion Department, Academy of Sciences USSR

"Interaction of Structural Groups in Molecules Containing a Phosphorus Atom at a Double Bond"

Moscow, Doklady AN SSSR, Vol 190, No 5, Feb 70, pp 1124-1127

Abstract: The effect of phosphorus containing groups on beta-substituted vinyl esters is manifested by a 20-30 cm^{-1} shift towards lower frequency of the double bond valence vibration and a 3-4 fold increase in the intensity of I_{1620}. Presence of groups such as $-PCl_2$, $-P(O)Cl_2$, $-P(S)Cl_2$ in vinyl aryl esters affects the characteristics of the phenyl ring, due to the intramolecular interaction of the phosphorus group with π-electrons of the $C_6H_5CH{:}CH-$ radical system. The intensity of the symmetric and and antisymmetric vibrations of the $-PCl_2$ group changes considerably on interaction with double bonds. Substitution of a phenyl radical for an

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820013-3"

USSR

RATOVSKIY, G. V., et al., Doklady AN SSSR, Vol 190, No 5, Feb 70, pp 1124-1127

alkyl radical almost doubles the $I_{460+490}^{sp}$ value. Consequently, I_{450}^{sp} of the symmetric vibration line of the P-Cl bond in $-P(S)Cl_2$ increases in a series of butyl, phenyl, p-bromophenyl vinyl esters and in styrenes. The authors conclude that presence of a $POCl_2$ group should have an effect on the polarizability of π-electron cloud.

2/2

1/2 030 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--INTERACTION OF STRUCTURAL GROUPS IN MOLECULES CONTAINING A PHOSPHORUS ATOM AT THE DOUBLE BOND -U-

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COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(5), 1124-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IR SPECTRUM, ORGANIC PHOSPHORUS COMPOUND, MOLECULAR ORBITAL, ELECTRON CLOUD, CHLORINE, EXCITATION ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1591 STEP NO--UR/0200/70/190/005/1124/1127

CIRC ACCESSION NO--AT0116999

UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0116999

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IR SPECTRAL DATA WERE TABULATED IN DETAIL FOR ROCH:CHPOCL SUB2 RPCH:CHPCL SUB2, ROCH:CHPSCL SUB2, AND ROCH:CHPO(ORPRIME1) SUB2, AS WELL AS PHCH:CHPCL SUB2, PHCH:CHPOCL SUB2, PHCH:CHPSCL SUB2 AND PHCH:CHP(O)ET SUB2, WHERE R WAS SELECTED FROM ET, BU, PH OR-P-BRC SUB6 H SUB4, AND R PRIME1 EQUALS ET OR BU; ALSO INCLUDED WAS PHOCH:CBRPSCL SUB2. FROM THESE DATA THE COMPARISON MADE WITH THE CALCD. MO ENERGY LEVELS OF MEP(O)CL SUB2, CH SUB2:CHPOLC SUB2, AND MEOCH:CHPOCL SUB2 SHOWED THE CLEARLY POLAR NATURE OF BOTH THE P(O) AND THE P(CL) BONDS IN THESE COMPDS. THE D ORBITALS OF CL AND P TAKE ALMOST NO PART IN FORMATION OF THE MOLECULAR ORBITALS OF THE OCCUPIED CATEGORIES, BUT THEY DO DET. THE NATURE OF THE RELATIVELY LOW 2, 4 AND 11 VACANT ORBITALS OF THESE MOLS. AS A RESULT THESE MOLS. CAN BE EXPECTED TO SHOW ENHANCED ELECTRONIC POLARIZABILITY AND LOW EXCITATION ENERGIES. THUS, THE PRESENCE OF A POCL SUB2 GROUP AFFECTS THE POLARIZABILITY OF THE ELECTRON CLOUD OF THE DOUBLE BOND, WHILE ALTERATION IN THE DISTRIBUTION OF THE LATTER AFFECTS THE PROPERTIES OF THE P CONTG. GROUPING, WITH SOME PARTICIPATION OF THE CL ATOMS IN THIS PROCESS. FACILITY: IRKUTSK. GOS. UNIV., IRKUTSK, USSR.

UNCLASSIFIED

USSR

UDC 517.948

FROLOV, Yu. N.

"A Method of Solving an Operator Equation of Infinite Order"

Moscow, Matematicheskiy Sbornik, No 11, 1972, pp 461-474

Abstract: The operator is defined by the equality

$$DF \equiv F^{(s)}(z) + p_1(z)F^{(s-1)}(z) + \ldots + p_s(z)F(z), \quad s \geqslant 2,$$

where the $p_i(z)$, $i = 1,2,\ldots,s$, are integral functions. The operator equation of infinite order to be solved is

$$M_L(F) \equiv \sum_{n=0}^{\infty} c_n D^n F(z) = 0, \qquad (1)$$

where $D^0 = 1$, $D^n = D(D^{n-1})$, and the characteristic function

$$L(\lambda^s) = \sum_{n=0}^{\infty} c_n (\lambda^s)^n$$

is an integral function of the first order, type σ. It is assumed

1/2

USSR UDC: 517.948

FROLOV, Yu. N., Matematicheskiy sbornik, No 11, 1972, pp 461-474

that $F(z)$ is regular in a circle whose radius is greater than σ, and, as a result, $M_L(F)$ is regular in the neighborhood of the center of that circle. This paper is, in part, based on an earlier article by the same author in the same journal mentioned above (O svoystvakh resheniy odnogo funktsional'nogo uravneniya -- Peculiarities of the Solution to a Functional Equation -- 69 (111) 1966, pp 605-615) in which the structure of equation (1) above was investigated.

2/2